D R A F T
NPIC/TDS/D-___-67
27 June 1967

MEMORANDUM FOR THE RECORD

SUBJECT : Chip Comparator Status Meeting

ATTENDEES: [redacted] 25X1A

1. On the 22nd of June the above listed individuals were given an informal briefing on the current status of the chip comparator problems. The significant topics discussed were:

a. The recent problems encountered and the reliaibility and repeatibility obtained to date. The most recent problems have all been related to the negator springs and the automatic bias control circuits installed as the most recent modification. [redacted] is currently working on a redesigned negator spring fix retrofit package which hopefully will eliminate the backlash and jerking movement problems presently encountered. Concerning the automatic bias control, the avenue of approach is less clear, but based on the latest information, it appears that a tolerable operation approach is available until a more acceptable approach can be worked out, preferably by returning at least two of the 405 B machines to [redacted] The

25X1A

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primary problems that remain are the apparent RF interference from the drive motors and determining how long the units will remain stable without reseting the bias memory (a relatively simple operator procedure).

b. Photo cell instability. It was pointed out to the attendees that the current visit by [redacted] personnel was most likely triggered by an instability (previously unknown to [redacted] in the clarex photo cells. Based on information obtained from the cell manufacturer it appears that after prolonged absence of exposure to light, the photo cells become unstable and require up to 80 hours of operation before they become stable again. After the last visit by [redacted] to reinstall the interfometers significant shifts in the bias voltage were observed and it is assumed that this was a result of the photocell performance. The operational components will have to consider their operational cycle of the machines to prevent photocell instability or a retorfit will have to be made to the machine to insure that adequate light intensity hits the cells at all times. In addition to this the warm up time in general was discussed.

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c. Measurement Accuracy in terms of repeatibility. It was pointed out that measurement repeatibility runs had been made recently over 4 1/2" distances with maximum deviations of

no more than three counts (approximately .8 microns) indicating that the comparator has intrensic capability once reliability can be achieved.

2. It was requested that an operation procedure document be prepared to insure that the machine is properly operated and they have some feel for what maintenance criteria are required. This is particularly important in view of the sensitivity of the chip comparators.

3. It was also requested that the environmental requirements necessary to maintain the instrument at peak performance be set down in writing and forwarded to them at the earliest possible date so that they can take the necessary action in requesting facility modifications.

4. In order to minimize testing and checkout on the remaining five machines I intend to take any necessary action to ship at least two complete chip comparators back to [redacted] so that the maximum amount of debugging can be done at the factory. 25X1A

[redacted] 25X1A
Development Staff, TDS

Draft

Memo for the Record

Subject: Chip Comparator Status Meeting 25X1A

Attendees:

On the 22 of June, the above listed individuals were given an informal briefing on the current status of the chip comparator problems. The significant topics discussed were:

A) The recent problems encountered and the reliability and repeatibility obtained to date. The most recent problems have all been related to the negator springs and the automatic bias control circuits installed on the 25X1A

is currently working on a redesigned negator spring fix retrofit package which hopefully will eliminate the backlash and other jerky movement problems presently encountered. Concerning the automatic bias control the avenue of approach is less clear, but based on the latest information it appears that a tolerable operative approach is availble until a more acceptable approach can be worked out, preferably by returning at least two of the 405B machines to

25X1A [redacted] The primary problems that remains is the apparent RF interference from the dc drive motors and determining how long the units will

remain stable without ~~operator~~ resetting the ~~bias~~ memory (a relatively simple operator procedure).

B) Photo cell instability. It was pointed out to the attendees that the ~~pre-past~~ current visit by [redacted] 25X1A personnel was most likely triggered by a instability (previously unknown to [redacted] 25X1A) in the clasp photocells. Based on information obtained from the cell manufacturer it appears that after prolonged absence of exposure to light, the photocells become unstable and require up to 50 hours of operation before they become stable again. After the last visit by [redacted] 25X1A to reinstall the interfometer

significant shifts in the bias voltage levels were ~~often~~ observed and it is assumed that this was a result of the photocell performance. The operational component will have to ~~coordinate material~~ consider their operational cycle of the machines to prevent photocell instability or a retrofit will have to be made to the machine to insure that adequate light intensity hits the cells at all times. In addition to this the ~~and~~ warm up time in general was discussed.

c), Measurment Accuracy in terms of repeatability. It was pointed out that measurment repeatibility was best ~~be~~ made recently over 4½" distances with maximum deviations of

no more than three counts (approx .8 microns) indicating that the comparator has intrinsic capability once reliability can be achieved.

2 FAST PAG requested that ~~the~~ operational procedure ~~[redacted]~~ and maintaince documents be ~~prepared~~ to insure

2. It was ~~[redacted]~~ requested that a operation procedure document be prepared to insure that this machine is properly operated and they have some feel for what maintaince criteria ~~can be~~ are required. This is particularly important in view of the sensitivity of the ~~[redacted]~~ parts

3. It was also requested that the environmental requirements necessary to maintain the instrument at peak performance be set down in writing and forwarded to them at the earliest possible date so that they can take the necessary actions in selecting facility modifications.

4. In order to minimize testing and checkout on the remaining five machines I intend to take any necessary action to ship at least two complete 25X1A
ship comparators back to [redacted]
so that the maximum amount of debugging can be done at the factory.

25X1A

Chip Comparator Operational Status meeting

X1A

FAS
TID
PAG
DIA
~~F~~DS

[redacted]

Current Status of machines

~~2 to be returned~~

~~Repeatibility obtained to date~~

~~Automatic Bias Control bit problems~~

~~Photo Cell Problems~~

~~Warm up time~~

Equipment performance staff to assist in evaluating machine

Environmental Requirements
Wet mop ±2°F ~~±5%~~ 55% ±5% Humidity

Maintaince Problems

25X1A

[redacted]

Incorporation set problem
Photo Cell problem.

Operational Status

~~Clean~~ Environmental Condo.
7 Wet mop floors & clean walls weekly
± 2°F ± 5%

ILLEGIB

25X1A

24 Oct 67 – [redacted] MFR

25X1A

26 Sept – [redacted] letter Req f/ funds Cont [redacted]

15 Sept – Mems f/ Ex Dir – [redacted]

25X1A

30 Aug 67 – Mems – Ex Dir [redacted]

30 June 67 – Letter – [redacted] to [redacted] requesting 2 rockets be analyzed.

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